SIGNAL SERVICE CORPORATION

ELIZABETH, NEW JERSEY

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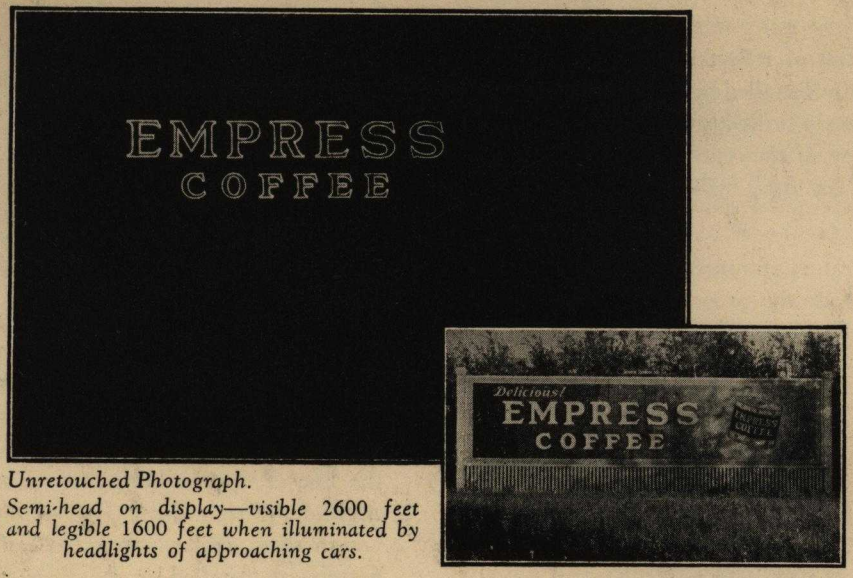
Mike Jackson, FAIA

REFLECTORS
for OUTDOOR ADVERTISING



Unretouched Photograph.
Semi-head on display—visible 2600 feet and legible 1600 feet when illuminated by headlights of approaching cars.

GENERAL

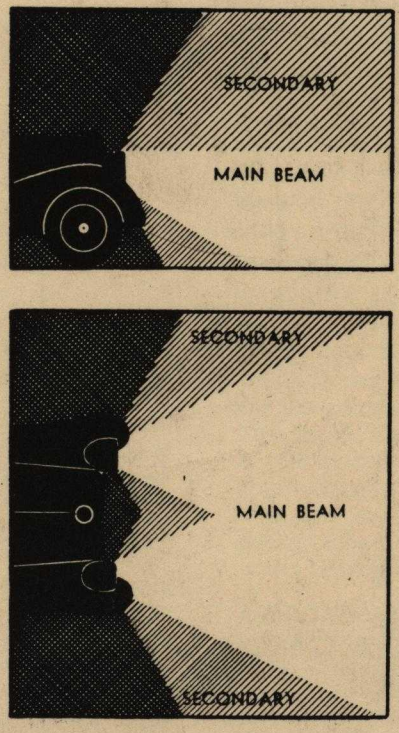
REFLECTORIZED outdoor advertising has proved its value. It has been used abroad for years, with excellent results and outdoor advertisers in this country are making effective use of reflectors to illuminate their copy.

The advertiser gets ten to twelve hours of night value with reflectors that he did not have from highway bulletins before, at an increase of about one-third over the usual monthly rental. This has resulted in substantial space contracts, during the past two years in spite of depression and often during off-season periods.

Reflector units are designed to receive light from automobile head lamps and to reflect this light back to the driver even though he may approach from an angle. Since the motor cars furnish the light there is no cost for illumination.

There is nothing mysterious about reflectors or their use. They are inexpensive, easy to install and maintain, and they do a good job.

Present day reflectors make use of the secondary beam of automobile headlights. Good results are secured in semi-head on as well as in head on locations and at elevations above the roadway as great as 25 feet or more. Reflectors are, therefore, effective for general roadside use.



The secondary beam from auto headlights has wide range upward and to the right and left. Reflectors for advertising make effective use of this secondary beam.

REFLECTORS

Most outdoor advertising bulletins are located so that they are covered by the indirect beam from automobile headlights. The reflectors must make efficient use of the light in this secondary beam. Only the best reflectors do this satisfactorily.

Reflectors are effective when used in locations where the observers approach in automobiles. They can not be effectively employed for pedestrians in store windows, or for close range work with fixed position floodlights. They give surprising results in signs located adjacent to the highway and are recommended for this purpose.

Reflectors must be sturdily made to meet conditions of service such as heat, cold, moisture and sulphur gases from coal smoke, to insure long life at minimum cost of maintenance. The method by which they are attached must be such that they are easily installed, will resist loosening because of roadside vibration, and be easily maintained.

The purchaser of reflector units should investigate carefully the qualities of various products offered. The best place to test the uniformity and brilliancy of reflectors is by laboratory measurement of candlepower or out on the highway under headlights. Office tests look convincing but are misleading.

The reflectorized treatment may consist of a single line of reflector units in the center of a stroke or the copy may be outlined.

While several colors are available, only crystal reflectors are recommended for the treatment of copy. Colors are occasionally used in the forming of designs. Light, including that from automobile headlamps, is made up of a number of colors. To produce red, that portion of the light which is in the red band of its spectrum is made use of and the rest is screened out or thrown away. If, under certain conditions, a crystal reflector sends 100 units of light back to the observer, under the same conditions the observer will get only 35 units of light from a red reflector, 25 units from a green reflector, and 75 units from a canary yellow.

Among the recommendations of an experienced outdoor man, who has made a study of reflectors and who has had years of experience in their use, are several points with respect to copy:

To begin with, don't stud spurs, tips or lugs, thick or thin lettering, or script.

Confine reflectors to the feature line, trade-mark or symbol.

Confine the first installation to crystal reflectors. Green or red reflectors should be used only for ornamentation or underscores because of their lack of brightness.

Best results can be obtained by spreading the feature line, from end to end, across the full length of the bulletin. Placing this feature line on the lower portion of the bulletin, but at least seven feet above the ground to discourage tampering, will somewhat increase the brilliancy of the indication.

Thus—

THE PITTSBURGHER HOTEL

Reward signs, placed on the back of the bulletin, will keep the sign from being molested by neighborhood children.

Distinctive alphabet which is very legible and economical when illuminated with reflectors.

A simple alphabet, such as that illustrated, is recommended for reflector use. This is a result of several years of experience. It permits a very legible reflector treatment and has the advantage of economy for the reason that all spurs, lugs and flourishes are omitted. This lettering has a distinctive value of its own; it is easily contracted or expanded and may be effectively reflectorized with either single line or outline treatment.

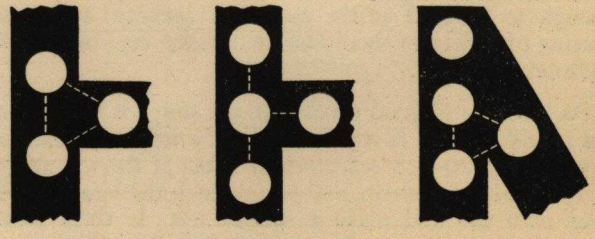
The following table contains recommendations for center to center spacing of Signal Service reflectors. These spacings are for the smallest copy in which the various sizes of Signal Service reflectors may be used:

Reflector Size	*Exposed Lens Diameter of Reflector*	*Use in Lettering With Stroke Width Not Less Than*	*Minimum Center to Center Spacing*	*Minimum Height of Letter*
1	.768″	1 1/16″	1 1/8″	8″
2	.692″	31/32″	1 1/32″	8″
3	.586″	27/32″	15/16″	6″
4	.500″	3/4″	27/32″	5″
5	.410″	5/8″	3/4″	4″

As the size of copy is increased these reflectors may be spaced farther and farther apart. For example, in 12″ lettering the No. 1 size is normally spaced about 1 3/8″. In 30″ or larger lettering good results can be secured from this size with 2″ spacing. It should be borne in mind, in connection with spacing, that the total amount of light emitted by the reflectorized copy is increased or decreased according to the number and size of reflectors used. Visibility and legibility of reflectorized copy at night should not be sacrificed by thinning out the reflectors too much.

Best results will be secured if a uniform spacing of reflectors is maintained. If 2″ is the selected average spacing, then all reflectors should be as close as possible to 2″ apart. If this spacing is 2″ between some reflectors and 1 1/2″ between some others, the resulting effect is usually not good.

At the junction of two strokes as in N, V or W, care should be taken not to get a thinning out effect or a bunching up of reflectors which will produce a blob of light in one portion of the letter that will detract from uniform distribution of illumination. The illustrations below show methods of avoiding this.



Where strokes meet reflectors should be laid out to form a T or a triangle, with as nearly equal sides as possible.

REFLECTORS *for* OUTDOOR ADVERTISING

ESTIMATING

The cost of a reflectorized treatment depends on the size and spacing of the reflectors in the copy and the method of applying them.

The following elements of cost cover the production of a reflector treatment exclusive of painting, and other cost items directly chargeable to paint operation:

Spotting reflectors on copy layout
Reflector units
Sheet Steel
Punching or drilling of holes
Assembly of reflectors
Mounting of treatment on face of bulletin

Each outdoor operator would do well to establish his costs for various operations necessary to apply reflector treatments, and then work out his approximate range of costs per reflector or per foot of illumination. Selling prices are quite easily put on the same basis.

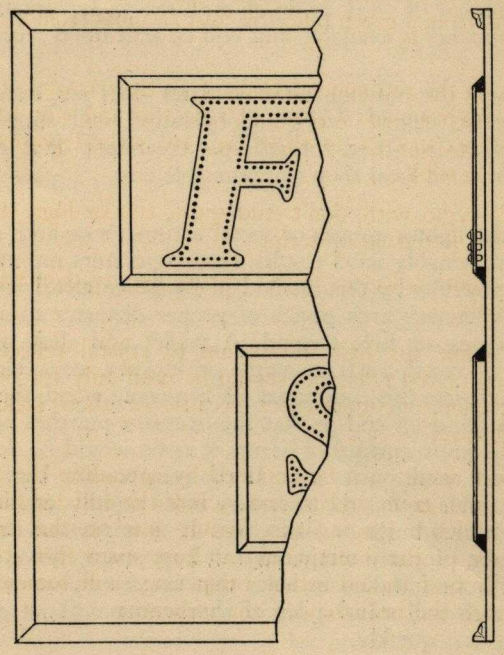
The following table indicates the approximate number of No. 1 Signal Service reflectors required per letter, with copy sizes running in 6″ steps from 12″ to 48″. The 12″ and 18″ tables are based on a single line treatment with 1½″ spacing, and the 24″, 30″, 42″ and 48″ tables are based on the outline treatment with 2″ spacing.

Approximate Number of No. 1 Buttons per Letter

	Single Row 1½" *Spacing*		*Outlined* 2" *Spacing*				
Letter	12"	18"	24"	30"	36"	42"	48"
A	18	24	52	66	78	92	104
B	22	32	60	76	94	108	120
C	16	22	46	58	70	84	92
D	20	30	58	72	88	102	116
E	18	25	58	72	88	102	116
F	13	20	48	60	72	84	96
G	20	29	60	76	92	108	120
H	18	28	62	78	94	108	124
I	8	11	30	38	46	54	60
J	13	18	44	54	66	78	88
K	18	27	56	70	84	98	112
L	12	17	44	54	66	78	88
M	24	32	76	96	116	134	152
N	20	28	60	76	92	108	120
O	20	28	60	76	92	108	120
P	18	24	52	66	78	92	104
Q	22	32	64	80	96	112	128
R	20	30	62	78	94	108	124
S	19	27	54	68	82	96	108
T	12	17	44	56	66	78	88
U	18	27	56	70	84	98	112
V	16	21	52	66	78	92	104
W	24	32	76	96	114	134	152
X	17	23	60	76	92	108	120
Y	14	19	50	62	74	88	100
Z	18	25	60	76	92	108	120

CONSTRUCTION

The reflectorized treatment can be erected without harming the face of the bulletin. The best method is to apply the reflectorized copy to sheet steel plates and to mount these sheets on the face of the bulletin, but separated from it by spacer strips about 3″ wide and 1″ thick. These spacer strips are usually beveled on their outer edge to kill shadow. The fact that this treatment is mounted on and spaced away from the face of the bulletin can not be observed even from a short distance away.



Steel plates, which carry the reflector treatment, are mounted with spacer strips beveled on outside edge to kill shadow.

Cut-out letters, studded with reflectors, may also be used. They provide an attractive shadow against the background during daylight.

Of these methods, the steel plate construction is recommended as best from the standpoint of first cost, resistance to tampering, enduring and satisfactory service, and low maintenance cost.

In selecting the gauge of steel do not make it too light. As a matter of fact, it should be made reasonably heavy. These sheet steel plates are spaced away from the face of the bulletin, and if 24 to 26 gauge steel is used, it must be well supported in the back by spacer strips. Even then, light plates are likely to become dented, twisted or bent. Such distortions produce highlight spots under headlights and are sometimes great enough to throw one or more reflectors so far out of angle as to be useless. The first cost and the cost of handling 20 to 24 gauge plates is not materially greater than for lighter steel sheets, and these heavier plates certainly have a lot of advantage from the standpoint of good results and lower maintenance cost for reflector treatments.

REFLECTORS *for* OUTDOOR ADVERTISING

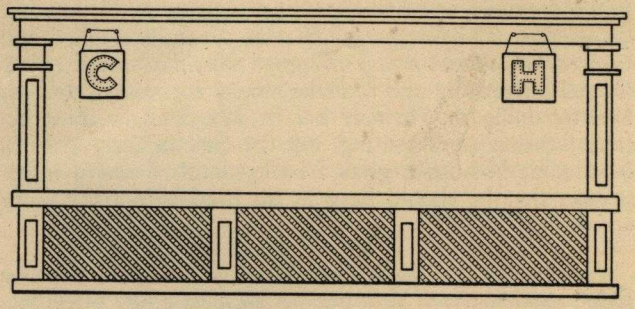
It has been found of interest to both small and large advertisers. Hotels, taverns, inns, resorts, oil companies and automobile people have made effective use of this medium.

Other prospects include:

Garages	Restaurants
Bus Lines	Beverage Bottlers
Railroads	Ferries
Taxi Services	Toll Bridges
Air Lines	Country Clubs
Real Estate Developers	Food Products

Hotels, garages and all night gas stations consider that any business they get after ten o'clock at night is velvet—they do not count on it. Reflectorized outdoor advertising offers a fine opportunity to the advertiser to get this all profit velvet.

The easiest way to develop a prospect's interest in a reflector treatment is by demonstration. Such a demonstration is best made by showing your prospect another reflectorized installation or several of them. If there is no reflectorized bulletin close by, or if your prospect wants to see how reflectors look on the space that he is buying, this demonstration can be made by means of two reflectorized letters. Two letters, "C" and "H", 30″ high, shown in the illustration, are recommended for this purpose.



Method of proving up if bulletin is properly located for reflector treatment and of demonstrating to prospective clients.

These letters may be hung from the top of the bulletin and at each end. Let your prospect do the driving. Be sure that your headlights are at least normally good.

It is important to point out to your prospect that there are only a few reflector units in the two letters, whereas in the copy which he will use there will be many more reflectors and, therefore, a greater total amount of light. For this reason his final reflectorized copy will come up much better as a whole than the two reflectorized letters demonstrated. If, therefore, you get a satisfactory indication and legibility from two letters you are safe in assuring your prospect that his copy will be even more effective.

Select locations for demonstration where there is as little competing light as possible. Also, be sure that darkness has set in before driving your prospect to the place where the demonstration is to be made. A number of trips back and forth should be made at slow speed. Point out to your prospect the distance at which the installation attracts attention, the value of the curiosity created by the installation over other methods of illumination, and the distance at which the copy is legible. Comparison with the cost of illumination by other means and the advantages of the circulation characteristics of the highway at night should also be discussed.

One or two other points should be made. With reflectors, the feature line, name and/or trade mark are brought up effectively at night. For many advertisers, it is of great advantage to emphasize a particular phrase or their name. Reflectors do this. Since head lamp illumination is rarely sufficient to illuminate the background of the bulletin, the reflectorized copy has a weird effect of appearing to be alive and unsupported. It is intriguing and appears to hang in the darkness. For this reason it attracts so much attention that, when an installation is made for the first time in a neighborhood, drivers often stop and get out of their cars to see what it is.

Sincere acknowledgment is made to members of Outdoor Advertising Incorporated and to many outdoor plant operators for their very helpful and constructive suggestions and contributions to this article.

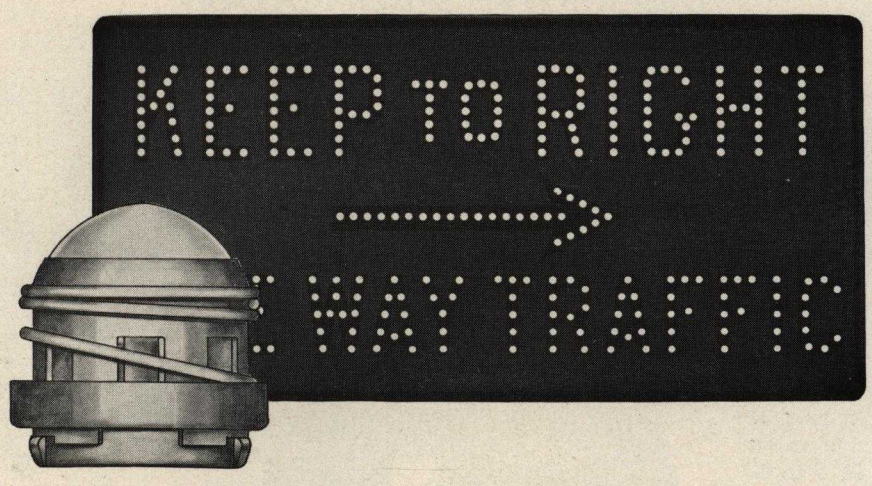
As additional experience in the use of reflectors for outdoor advertising develops, it is our plan to publish it for the benefit of the industry. Suggestions and operating experiences are invited from all outdoor advertising plant operators. Photographs of installations, good sales methods and other points of general interest will be appreciated.

SIGNAL SERVICE CORPORATION
ELIZABETH, NEW JERSEY

AL-723—5-34—4M

Printed in U.S.A.

PRECISION LENS REFLECTOR UNITS



PRINCIPALS INVOLVED

THE development of precision lens reflector units has followed closely upon the increase in the number of motor vehicles and improvement of motor headlights. These reflectors, which are designed to be installed in signs, are illuminated at night when approached by an automobile so that the reflectorized copy is brilliantly legible even though the driver may be approaching from any angle.

Information, which follows, will be of interest to purchasers of precision lens reflector units who are not wholly familiar with the principles involved:

Legibility:

If a sign does not clearly transmit its message to an observer it fails in its purpose. Legibility of copy is, therefore, of great importance. Precision lens reflector units, with which the copy is studded, must provide legibility at night without too great a sacrifice of daytime legibility. This requires a precision lens reflector unit that is highly brilliant at night and as small as possible so there will be as little sacrifice of stroke width of the letter as possible. Precision lens reflector units must also be uniform in their indication. Lack of uniform brilliance in precision lens reflector units destroys legibility just as much as an electric sign in which lamps are burning at different intensities.

These factors, brilliance and uniformity of indication combined in a small sized reflector, require correctness of design and a high degree of accuracy and precision in production.

Optics:

The principle employed in precision lens reflector units is that of refraction and reflection so that light received by the reflector is reflected back in the direction of its source. Since a driver's eyes are above the level of the headlights, the reflector must spread or lift the returned beam of light sufficiently to reach the eye of the observer. Precision lens reflector units must provide a sufficient spread of the returned beam but avoid excessive loss of light caused by too much spread.

Reflector Lens:

The reflector lens must be corrected for irregularities which occur in its surfaces in the process of molding and cooling; otherwise light is wasted. In a lens, correctly designed to avoid light losses, white light tends to break up into its colors. This chromatic aberration must be avoided without undue loss of brilliance.

Silvered Reflector:

The reflecting surface behind the lens must be of exact curvature and should be of silver which reflects the light from automobile headlamps more efficiently than other metals.

Optical Assembly:

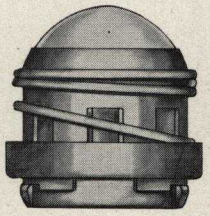
The lens and reflector must be correctly and permanently focused in production and this focus must be maintained in service.

The assembly must be such that the chamber enclosed by the reflector and lens is permanently sealed against the intrusion of harmful gases, moisture, and dirt; otherwise the efficiency of the unit will be seriously impaired.

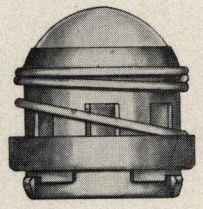
Method of Attachment:

The method by which precision lens reflector units are attached in signs must provide ease and economy of production and later maintenance. The attachment should be independent of close tolerances, accuracy of register, depth or dimensions of other elements of the sign assembly. The attachment should be proof against loosening by roadside vibration and pilfering.

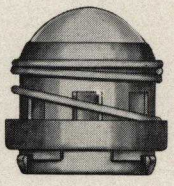
PRECISION LENS REFLECTOR UNITS
DESCRIPTIVE SPECIFICATION



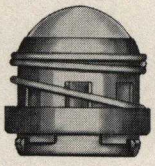
Size ALA1



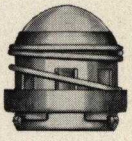
Size ALA2



Size ALA3

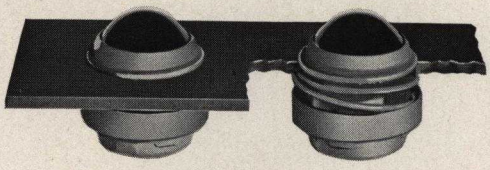


Size ALA4



Size ALA5

The Signal Service, precision lens reflector unit depends for its illumination upon light from an external source, such as from automobile headlamps. This light is reflected back in the direction of the source; that is to say, the reflected beam is substantially parallel to and coincides with the incoming beam. It is efficient when approached from any angle out to thirty degrees from head on.



Precision lens reflector units are securely fastened to the sign plate by a mounting spring and sleeve

The assembly consists of an optical lens of suitable design properly located in relation to a silvered and polished reflector. This assembly is permanently enclosed and hermetically sealed in a drawn aluminum housing. A mounting sleeve and spring, by which the reflector is securely fastened in the sign plate, complete the unit. The assembly is sturdy in construction and is designed to resist normal roadside abuse.

Optical Assembly:

The lens, corrected for spherical aberration, is of optical glass, carefully molded and annealed and then precision ground and polished. It is free from cooling strains, tough, and has no weak sections or projections.

The reflecting element consists of a drawn metal cup of correct curvature, silvered and polished on its inner surface. This reflector is properly related to the lens to produce an optical assembly that has a high degree of efficiency without the defect of chromatic aberration.

Accurate manufacture assures uniform brilliance of indication of the reflector in service and provides maximum legibility of the signs in which they are installed.

Housing:

The optical assembly is contained in a drawn aluminum housing in such a manner that the relationship of the lens and of reflector is accurately established and maintained in normal service. The optical assembly is hermetically sealed, thus to exclude moisture, dirt and harmful gases. The housing is sturdy and will meet all normal service requirements.

Minimum Dimensions:

Signal Service precision lens reflector units are reduced to minimum dimensions for corresponding optical requirements. The depth and ruling diameters cannot be further reduced without sacrificing important points in design. The weight is kept at a minimum thus reducing shipping costs and sign weights.

Method of Attachment in Signs:

Signal Service precision lens reflector units may be securely attached to the metal surrounding the pierced or drilled hole in the sign. They accommodate varying thickness of sign plate and do not depend upon accurate register, depth or dimensions of other elements of the sign assembly. They will not vibrate loose in service and are pilfer proof.

For wood signs, a fitting is provided that holds the reflector securely in place in the drilled hole in the sign.

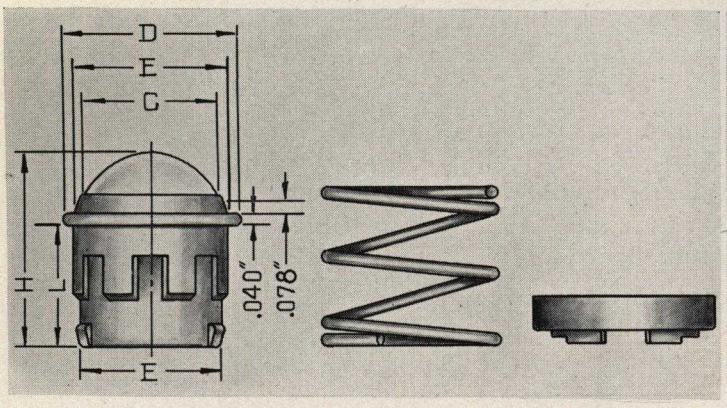
Sizes and Colors:

Five sizes and four colors—crystal, canary, green and red—are available.

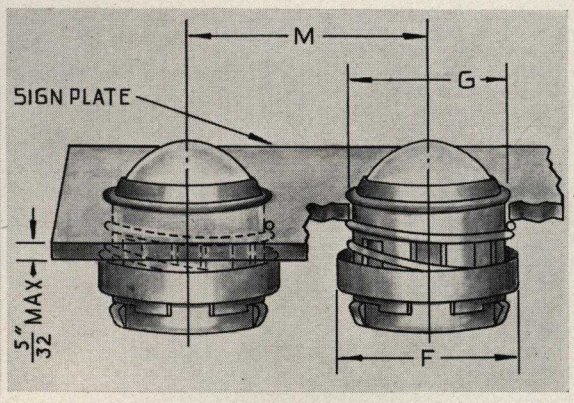
Net and Packed Weights in Lots of 100

	Size ALA 1	Size ALA 2	Size ALA 3	Size ALA 4	Size ALA 5
Net weight	4	3	2¼	1½	1⅛
Packed weight	4½	3½	2¾	2	1½

PRECISION LENS REFLECTOR UNITS
DIMENSIONS AND DATA



Precision lens reflector units with mounting spring and sleeve for use in metal signs. See page 4 for reflector unit with device for wood mounting.



Complete Assembly

Dimension	Size ALA 1	Size ALA 2	Size ALA 3	Size ALA 4	Size ALA 5
C	.768"	.692"	.586"	.500"	.410"
D	.955"	.877"	.7675"	.674"	.580"
E	7/8"	51/64"	11/16"	19/32"	1/2"
F	1.0348"	.9568"	.8358"	.7418"	.6448"
G	57/64"	13/16"	45/64"	39/64"	33/64"
H	1.065"	.9729"	.869"	.7756"	.670"
L	11/16"	5/8"	9/16"	1/2"	7/16"
M	1 1/8"	1 1/32"	15/16"	27/32"	3/4"

Symbol

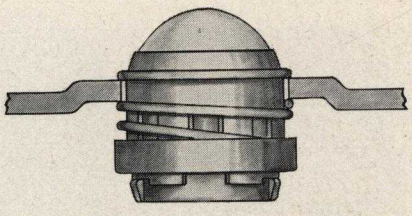
Crystal	ALA 11	ALA 21	ALA 31	ALA 41	ALA 51
Yellow	ALA 12	ALA 22	ALA 32	ALA 42	ALA 52
Green	ALA 14	ALA 24	ALA 34	ALA 44	ALA 54
Red	ALA 15	ALA 25	ALA 35	ALA 45	ALA 55

In ordering specify if metal or wood sign mounting accessories are required.

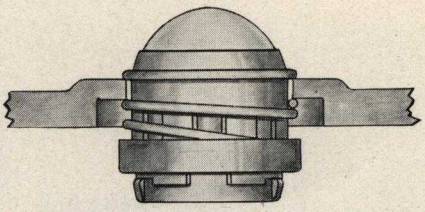
C—Optical or exposed diameter of lens.
D—Outside diameter of mounting flange.
E—Diameter of mounting hole in wood signs.
Diameter of shell of reflector.
F—Outside diameter of mounting sleeve.
G—Required diameter of pierced or drilled hole in metal signs.
H—Overall depth of reflector.
L—Depth of reflector behind mounting flange, i. e., behind face of sign plate.
M—Minimum spacing between reflectors.
Maximum spacing is normally about 1 1/2 times minimum.

SIGNAL SERVICE CORPORATION
ELIZABETH, NEW JERSEY

METHOD OF ATTACHMENT IN SIGNS



Mounted in embossed or flat sheet steel



Mounted in castings

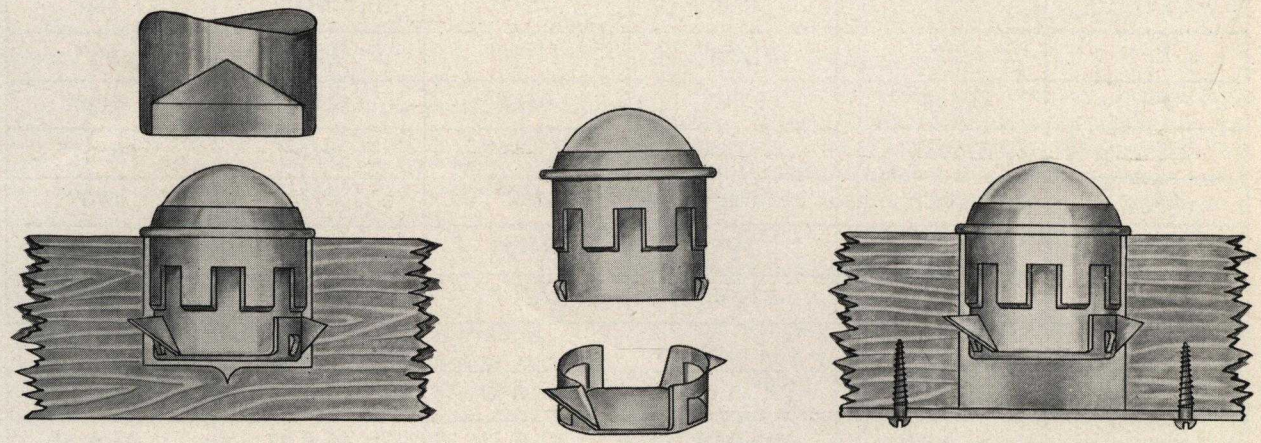
Embossed and Flat Sheet Steel:

Signal Service precision lens reflector units are easily installed in metal signs. The reflector is inserted so that the flange at the front fits against the face of the sign. The mounting spring and sleeve are then attached to the rear of the reflector. The mounting sleeve, when installed, is given a quarter turn, to a locking position. The reflector cannot vibrate loose in service and resists pilfering. It permits economical production of signs, and maintenance is made easy. Each reflector is securely and individually mounted, without the use of intermediate plates or other sign accessories. It also accommodates normal variations in sign thickness.

Castings:

These precision lens reflector units are readily assembled in cast signs with the standard metal sign mounting accessories provided the thickness of metal around the hole does not exceed 5/32". The sign should be cast with a countersunk hole which will permit this mounting or it may be counterbored.

Tool for mounting reflector unit in sign



Precision lens reflector unit with attachment for use in wooden signs

Wood:

Signal Service precision lens reflector units are supplied with a fitting for wood sign mounting. The hole in the sign is drilled neat, that is, just the diameter of the rear section of the reflector. The hole is treated with shellac or paint, to seal the pores of the wood and to keep out moisture. The precision lens reflector unit with the wood mounting clip is then forced into the hole by means of a tool provided for the purpose. The barbs on the wood mounting clip are flared so that the barbs spiral into the hole. Where it is desired to recover the precision lens reflector unit after a short period of use, the hole in the sign should be drilled straight through and a back plate placed over the rear of the sign as illustrated. To recover the reflector, the back plate is removed and the reflector may then be driven out from the rear with a flat faced tool without any injury to the reflector.

SIGNAL SERVICE CORPORATION

ELIZABETH, NEW JERSEY

7½M—Printed in U.S.A.

AL-705
(Revised)

June 1, 1935

SIGNAL SERVICE

WHOLESALE PRICES - PRECISION LENS TYPE REFLECTOR BUTTONS

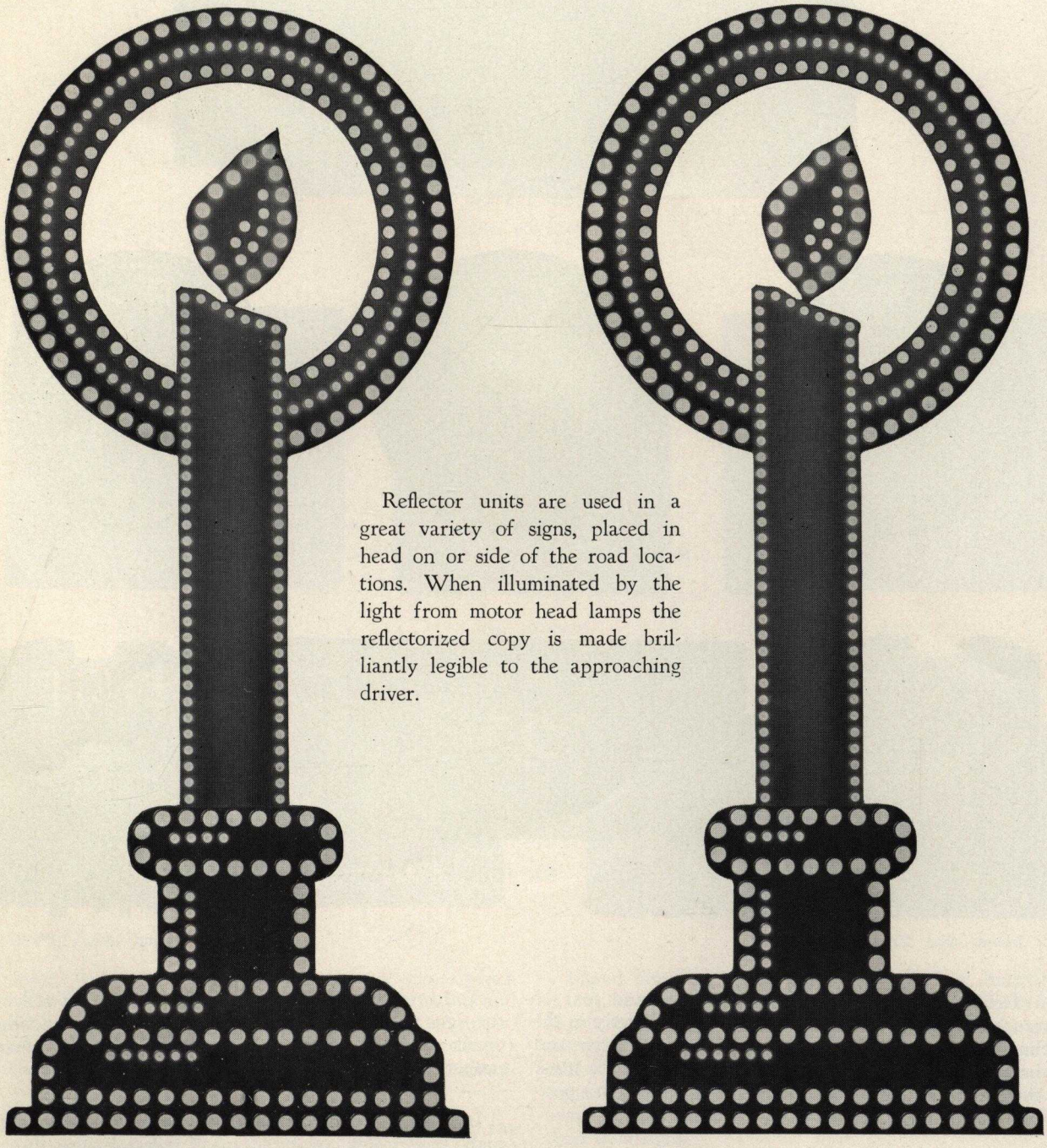
For Dimensions and Data See Bulletin AL-6

Symbol No.	Size	Button Weights -/100 Net	Button Weights -/100 Packed	Color	Price
ALA-11	1	4#	4-1/2#	White	$.07
" 12				Yellow	.07
" 14				Green	.085
" 15				Red	.085
ALA-21	2	3#	3-1/2#	White	.065
" 22				Yellow	.065
" 24				Green	.08
" 25				Red	.08
ALA-31	3	2-1/4#	2-3/4#	White	.06
" 32				Yellow	.06
" 34				Green	.075
" 35				Red	.075
ALA-41	4	1-1/2#	2#	White	.06
" 42				Yellow	.06
" 44				Green	.075
" 45				Red	.075
ALA-51	5	1-1/3#	1-1/2#	White	.055
" 52				Yellow	.055
" 54				Green	.07
" 55				Red	.07

The above prices are f.o.b. Elizabeth, N. J.

SIGNAL SERVICE CORPORATION
Elizabeth, New Jersey

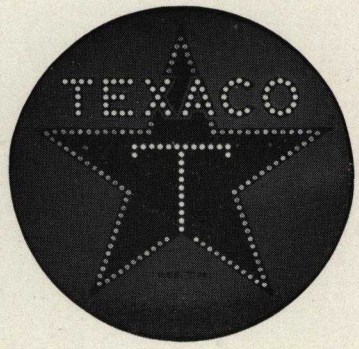
MADE TO ORDER REFLECTOR SIGNS



Reflector units are used in a great variety of signs, placed in head on or side of the road locations. When illuminated by the light from motor head lamps the reflectorized copy is made brilliantly legible to the approaching driver.

MADE TO ORDER REFLECTOR SIGNS

Size 118″x40″



Reflector signs for rear of trucks 28″ dia.

Metal—Size 20″x26″

Size 48″x20″

Wood—Size 20″x26″

Reflector signs, mounted on the front and rear of trucks, are popular. Since these signs are directly in the line of approach of vehicles they are very effective and brilliantly display the name and trademark of the truck owner. As an additional indication of the truck's position on the road they serve also as a safeguard

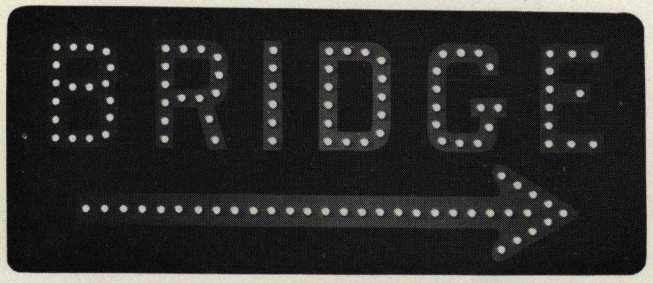
Clubs and institutions find reflectorized signs excellent to indicate their entrances, to regulate traffic in one-way drives, and for parking areas at night.

Toll bridge and ferry companies make use of reflector signs to regulate traffic and as a means of attracting or of directing traffic over roads that lead to their properties.

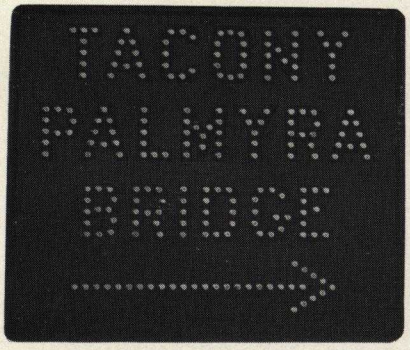
Information may be effectively given to drivers at night at very low cost by means of reflector signs. Since the motorist furnishes the light, these illuminated signs cost nothing to operate. Such signs can be made to meet any normal requirement.

SIGNAL SERVICE CORPORATION
ELIZABETH, NEW JERSEY

MADE TO ORDER REFLECTOR SIGNS



Size 60″x24″

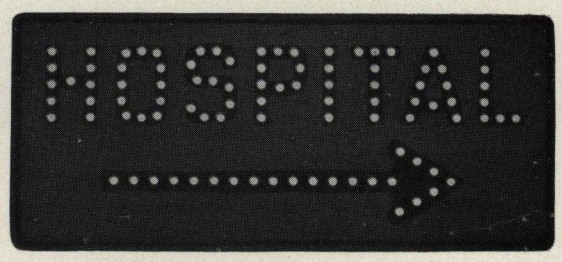


Size 36″x30″

Size 30″x30″

Size 36″x30″

Size 56″x22″



Size 42″x18″

Signal Service made to order reflector signs, which are normally furnished with full box construction and with rounded corners, are sturdy and pleasing in appearance. They are made of Galvannealed (rust-resisting) sheet steel or, if light weight is required, sheet aluminum may be used.

Reflector signs are furnished when required in the form of sheet steel plates which carry the reflectorized copy and which are adapted for mounting on the face of existing bulletins or sign installations by means of battens or spacer strips. Cutout wood letters, studded with reflectors and in any size required, are also offered.

Signal Service reflector units (described in Bulletin AL-6) are used in these signs. These reflectors are brilliantly uniform under headlights at night. They are sturdy in construction, are made to resist weather and other service conditions, are easily installed, and are economically maintained. These reflector units are also available in bulk to those who are equipped to produce their own signs.

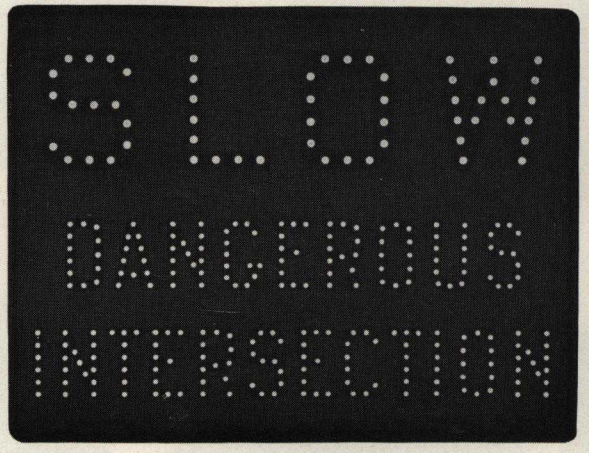
Literature describing standard traffic signs and reflector treatment of large bulletin boards will be sent upon request.

SIGNAL SERVICE CORPORATION

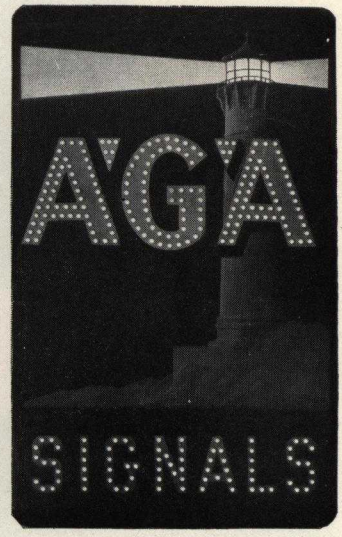
ELIZABETH, NEW JERSEY

MADE TO ORDER REFLECTOR SIGNS

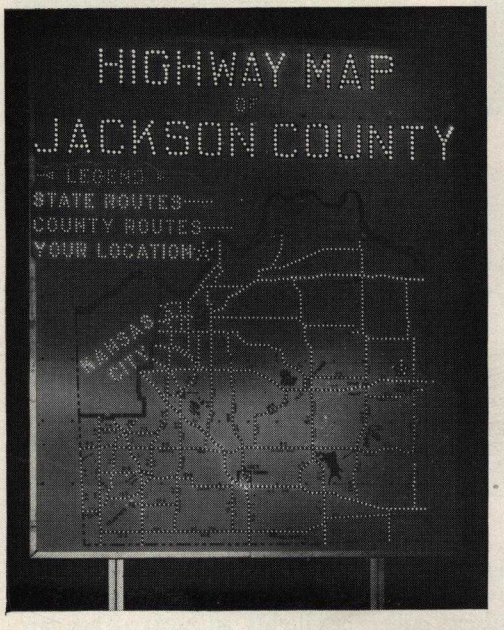
Size 47″x120″



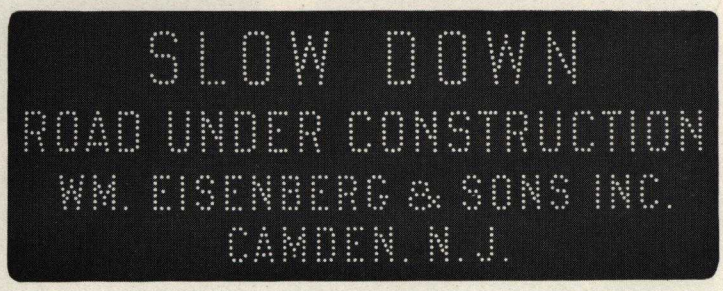
Size 48″x36″



Size 46″x72″



Size 144″x180″



Size 96″x36″

Size 48″x24″

In buying made to order reflector signs give full data as to copy, dimensions and other requirements. Any copy 4½ inches high or more can be reflectorized. Signal Service reflectors are used in small signs and for 50 foot bulletins with 4, 5 and 6 foot letters. Signal Service maintains facilities for the layout of signs and will, upon receipt of order and necessary information, submit layouts for approval before proceeding to produce the sign.

SIGNAL SERVICE CORPORATION

ELIZABETH, NEW JERSEY

SS SIGNALS

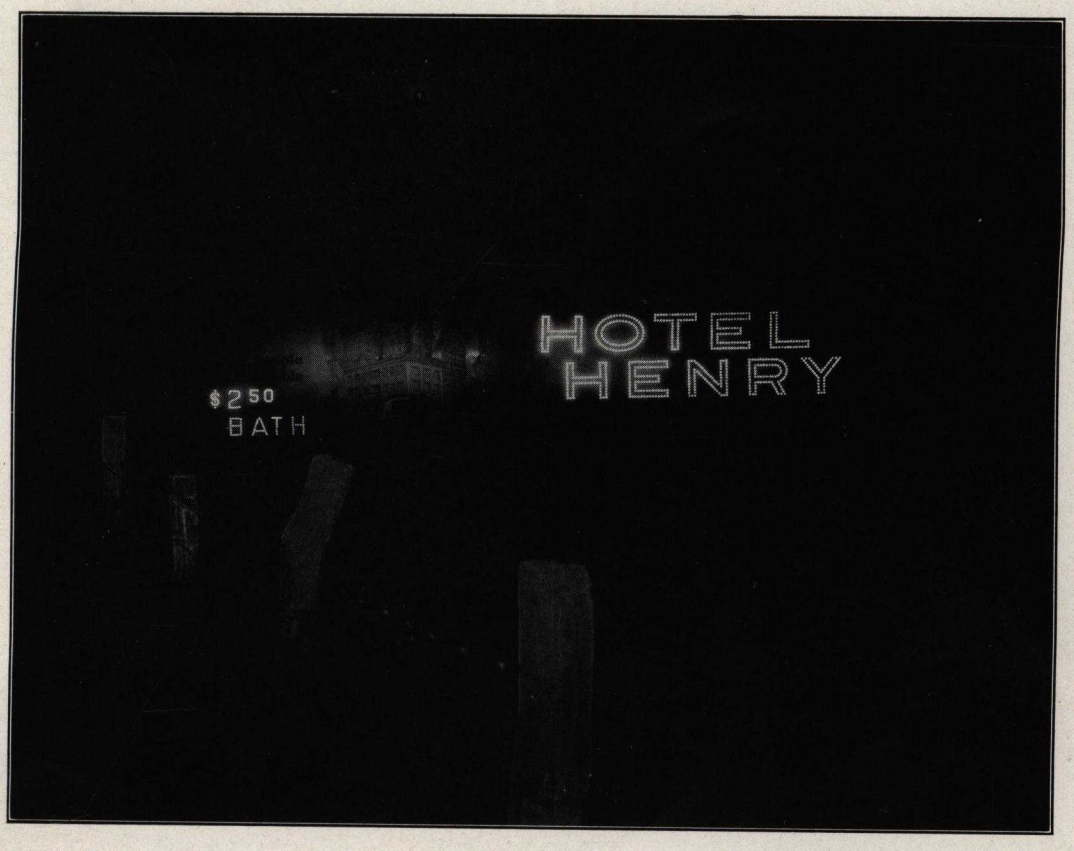
7½M—PRINTED IN U.S.A.

REFLECTOR SIGNS

AUGUST, 1932 BULLETIN A. L. 11

REFLECTORIZED BULLETIN

"HOTEL HENRY"



The copy which is 2 feet in height, is studded with Signal Service precision lens reflector units. These reflectors are brilliantly illuminated at night by the headlights of approaching automobiles.

The reflectorized copy on this bulletin is brightly legible throughout the entire distance of approach of over 900 feet. The fact that three duplicates of this bulletin were installed, in the vicinity of Pittsburgh, following inspection of the first installation, indicates a high degree of satisfaction with results secured.

Signal Service offers its reflector units in five sizes and four colors. Layout service is available and sign plates will be produced, if desired, for those who wish to install reflectorized treatments. Full information will be furnished upon request.

SIGNAL SERVICE CORPORATION
ELIZABETH NEW JERSEY

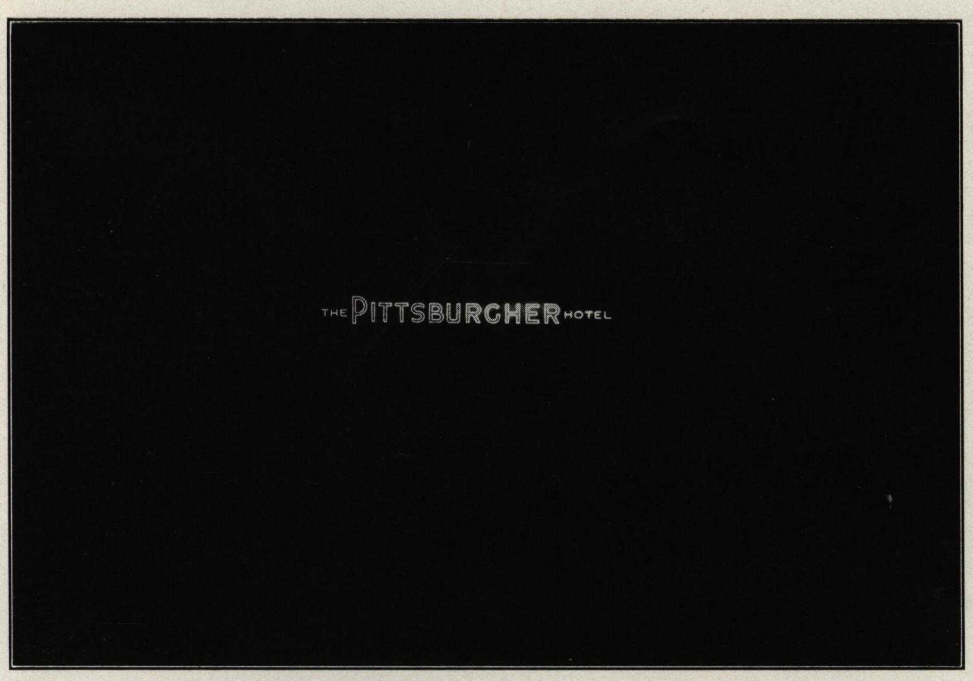
2½M—Printed in U. S. A.

REFLECTOR SIGNS

AUGUST, 1932 BULLETIN A. L. 12

REFLECTORIZED BULLETIN

"THE PITTSBURGHER HOTEL"



This bulletin is located at the side of the road on a 1000 foot straightaway. The copy which is 2 feet in height, is studded with Signal Service precision lens reflector units. The copy is legible throughout the entire distance when illuminated at night by the headlights of approaching automobiles.

The outdoor advertiser who desires an illuminated display will find this reflectorized treatment to give complete satisfaction. The first cost and maintenance are low—the motorist furnishes the light.

Five sizes and four colors of these reflector units are offered together with layout service and other materials necessary for the proper application to outdoor displays. Detailed information will be sent upon request.

SIGNAL SERVICE CORPORATION
ELIZABETH NEW JERSEY

SS SIGNALS

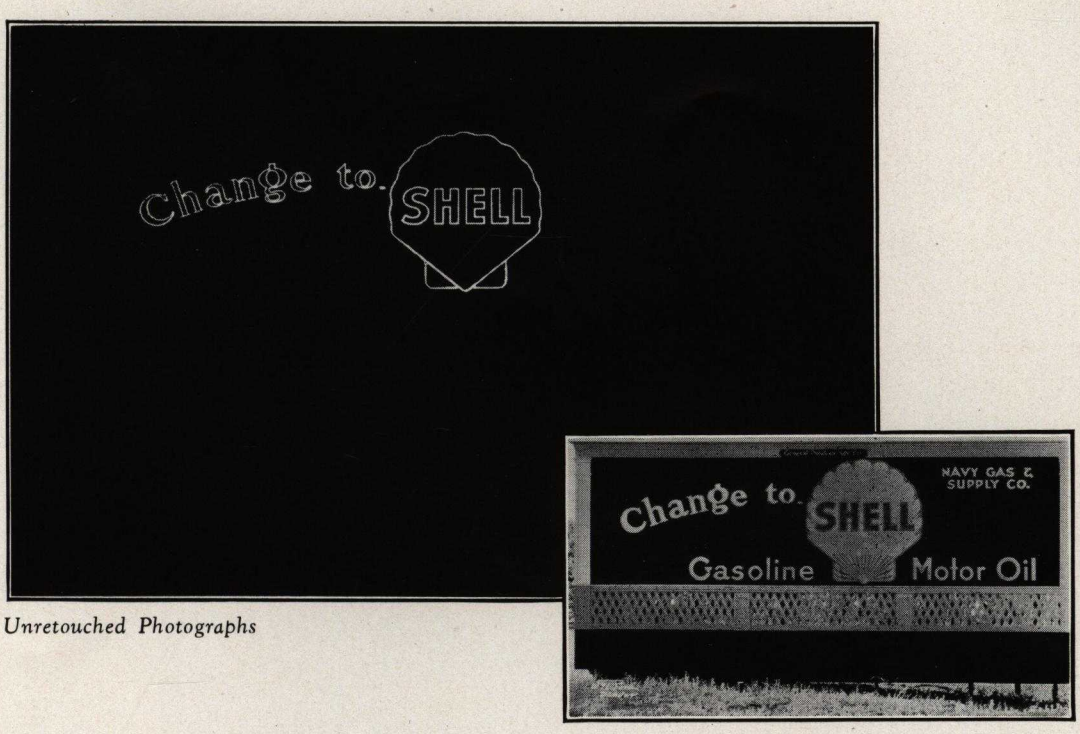
2½M—Printed in U. S. A.

REFLECTOR SIGNS

OCTOBER, 1932 BULLETIN A. L. 13

REFLECTORIZED BULLETIN

"Change to SHELL"



Unretouched Photographs

This reflectorized bulletin is installed on the Morrison road near Denver. It has a visibility of 3,000 feet and the copy is legible at approximately 1,000 feet. This reflectorized bulletin has resulted in the installation of a number of other reflectorized bulletins in the vicinity of Denver.

The treatment illustrates the application of reflector units to simple designs as well as to copy.

Signal Service reflectors are available for outdoor bulletins in five sizes and four colors. Full information on request.

SIGNAL SERVICE CORPORATION
ELIZABETH, NEW JERSEY

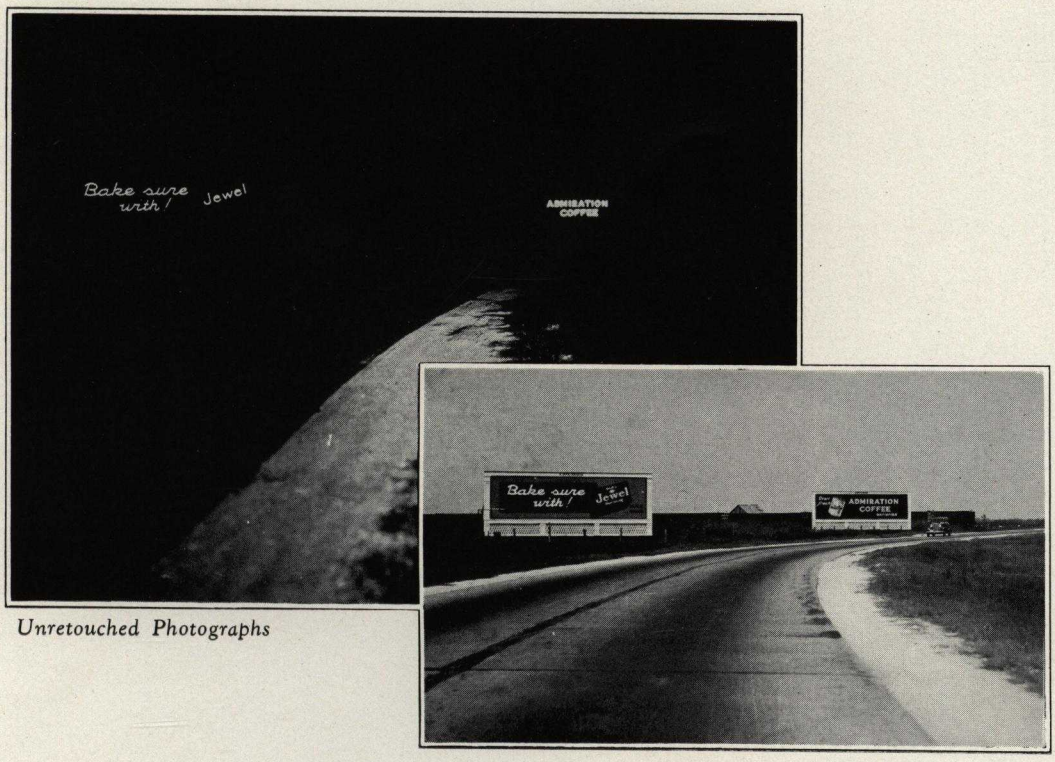
2½M—Printed in U. S. A.

REFLECTOR SIGNS

JANUARY 1934 BULLETIN A. L. 16

REFLECTORIZED BULLETINS

Swifts "JEWEL" Shortening and "ADMIRATION COFFEE"



Unretouched Photographs

These reflectorized bulletins are installed near Houston, Texas, by the Southwest Outdoor Advertising Company. They have a visibility of 3,000 feet and the copy is legible at 1,500 feet. The photograph was taken at 1,000 feet.

This treatment illustrates both side-of-the-road and head-on locations.

Signal Service Reflector Units are on the approved list of the Outdoor Advertising Association of America, Inc. and are available in five sizes and four colors. They are extensively used by the outdoor industry for the treatment of highway bulletins. Full information on request.

SIGNAL SERVICE CORPORATION
ELIZABETH, NEW JERSEY

SS SIGNALS

2½M—Printed in U. S. A.

REFLECTOR SIGNS

FEBRUARY 1934 BULLETIN A. L. 17

REFLECTORIZED BULLETIN

MOSBY-MACK MOTOR CO.

Unretouched Photographs

This reflectorized bulletin is one of several installed by the Hinkson-Crawford Advertising Company in Topeka, Kansas, for various clients.

The copy ranges from 12 to 36 inches in heighth. The near end of the sign is 26 feet from the edge of the road and at a right angle to it. Visibility is reported to be 10,200 feet and legibility exceeds 1,800 feet.

Note that, while the small sign with copy "Pauline" is illuminated, the background to the reflectorized copy is not. This illustrates the fact that the reflectors are illuminated by the secondary beam rather than the main beam of the headlights.

The reflectorized treatment gives your highway bulletin twenty-four hour value, at low first cost and with no expense for light—the motorist furnishes that.

Complete information upon request.

SIGNAL SERVICE CORPORATION
ELIZABETH, NEW JERSEY

2½M—Printed in U. S. A.

REFLECTOR SIGNS

JULY, 1934 BULLETIN A. L. 18

REFLECTORIZED BULLETIN

"TUTWILER HOTEL"

Unretouched Photographs

This Tutwiler Hotel bulletin is one of three installed by the General Outdoor Advertising Company of Birmingham, Alabama, at various locations on main highways within five to eight miles of the Hotel.

Each bulletin has approximately 1,800 Signal Service reflectors. The Hotel Management express themselves as highly pleased and say that they have had more comment about these signs than any other advertising they have used.

The rooster design, which is done in color, is attractive and comes up very effectively.

The installation is well located. It can be seen and its message read through a long distance of approach.

Signal Service reflectors are available for outdoor bulletins in five sizes and four colors. Full information upon request.

SIGNAL SERVICE CORPORATION
ELIZABETH, NEW JERSEY

2½M—Printed in U. S. A.

Reflector Signs

SEPTEMBER, 1934 BULLETIN A. L. 20

REFLECTORIZED BULLETINS

Installed by

GENERAL OUTDOOR ADVERTISING COMPANY, ATLANTA

Unretouched Photographs

"Painted bulletins were valuable advertising before roads were paved and travelers arrived before dark. We now catch many after dark guests by illuminating with reflectors our advertising bulletins on main highways into Atlanta. The night value of these reflectorized bulletins is so good that it would be difficult to persuade us to use any other kind."

—*Ansley Hotel*

"Constant favorable comments on reflectorized treatment of these signs indicates that they are playing their part in making the Piedmont one of Atlanta's leading hotels. Our contract for one more sign, making eight in all, is evidence that we are still as pleased as when the first sign was built."

—*Piedmont Hotel.*

"We are very highly pleased with our decision to reflectorize painted bulletins previously installed thus to take advantage of twenty-four hour flow of traffic. We expect real and beneficial results from this additional investment."—*Belle Isle Garage.*

Signal Service reflectors were used in these installations.

SIGNAL SERVICE CORPORATION

ELIZABETH, NEW JERSEY

SS SIGNALS

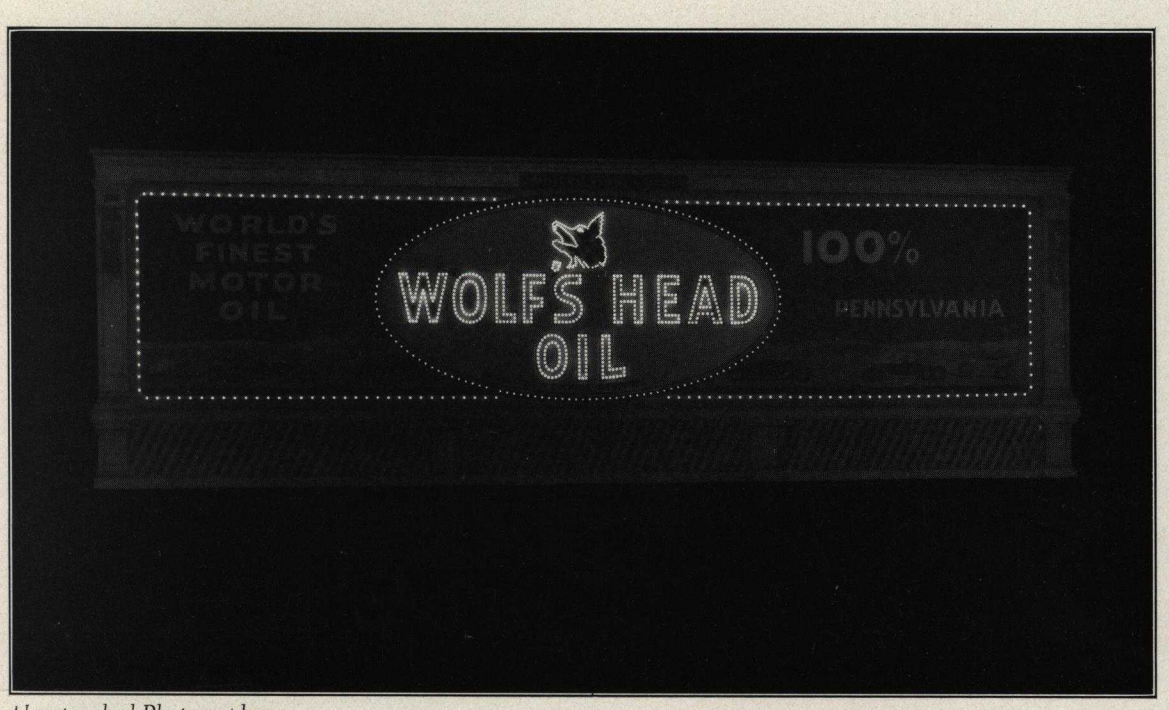
2½M—Printed in U. S. A.

REFLECTOR SIGNS

SEPTEMBER, 1934 BULLETIN A. L. 21

REFLECTORIZED BULLETIN

"WOLF'S HEAD OIL"



Unretouched Photograph

This bulletin, in New Jersey, ten miles south of New York on U. S. No. 1 highway, was installed by the United Outdoor Advertising Co. of Newark.

The reflector treatment of the copy is sharply legible at 1,000 feet. Much interested and favorable comment indicates that it attracts the attention of the very heavy all-night traffic at this point.

Part of the attraction of this treatment lies in the design of the wolf's head and the outlined treatment of the oval and border.

Signal Service reflectors were used in this installation. Full information will be furnished upon request.

SIGNAL SERVICE CORPORATION
ELIZABETH, NEW JERSEY

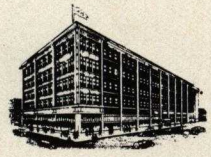
SS SIGNALS

2½M—Printed in U. S. A.

REFLECTOR SIGNS

DECEMBER, 1934 BULLETIN A. L. 23

REFLECTORIZED BULLETIN



J. B. IVEY & COMPANY

DEPARTMENT STORE

CHARLOTTE, NORTH CAROLINA

J. B. IVEY, PRESIDENT
DAVID OVENS, VICE PRESIDENT & GENERAL MANAGER
W. T. BUICE, VICE PRESIDENT & MERCHANDISE MANAGER
GEO M. IVEY SECRETARY & TREASURER

September 21st. 1934.

Mr. M. R. Yetter, Sales-Manager
General Outdoor Advertising Company,
Richmond, Virginia:

Dear Mr. Yetter:

I have not had an opportunity to write you since the seven highway bulletin boards were completed with the reflector button treatment.

We think this installation is the most effective outdoor advertising we have ever had, and there has been more favorable comment from the public who have viewed the bulletins than any kind of outdoor advertising that has been done in this territory in a long time.

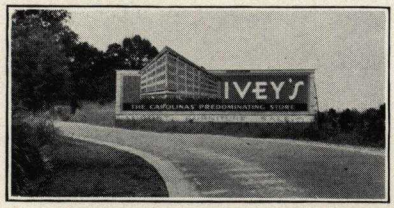
The remarkable effect of having the word Ivey's light up in front of you as your automobile head-lights hit the bulletins at night has a lasting effect, and we are very much pleased with this new type of installation.

Thanking you and other members of your organization for your cooperation, I am

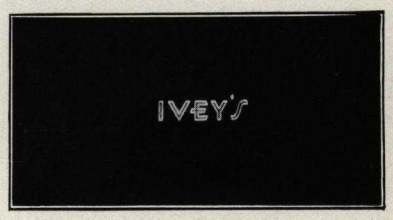
GMI-T

Very truly yours,

Geo. M. Ivey



Unretouched Photographs



SIGNAL SERVICE CORPORATION

ELIZABETH, NEW JERSEY

SS SIGNALS

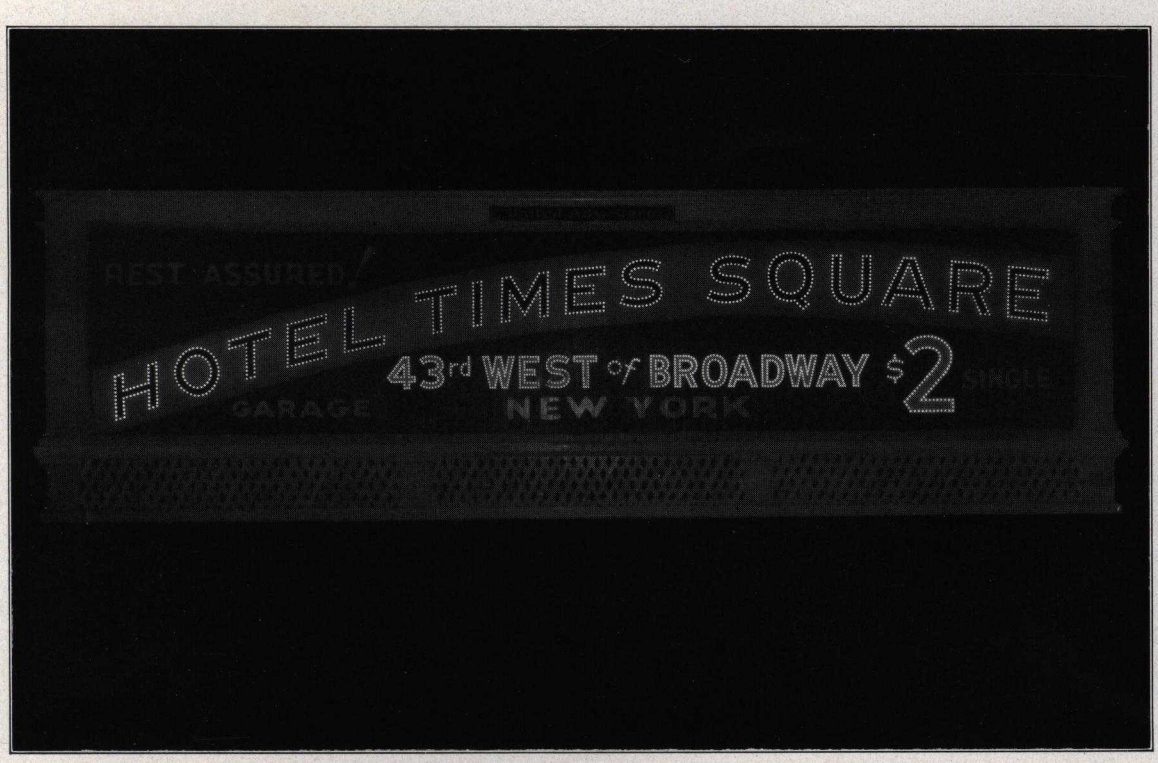
4M—Printed in U. S. A.

REFLECTOR SIGNS

JANUARY, 1935 BULLETIN A. L. 24

REFLECTORIZED BULLETIN

"HOTEL TIMES SQUARE"



Unretouched Photograph

This reflectorized bulletin for the Hotel Times Square of New York was installed by the United Advertising Corporation of Newark, New Jersey, on N. J. State Highway No. 25 (U. S. No. 1) near Rahway, about twenty miles from New York.

The bulletin is located on the left side of the road in position so that, in spite of two lanes of traffic approaching in the opposite direction, the reflectorized copy is brilliantly illuminated.

Those concerned with this installation are highly pleased, and the Hotel Times Square is delighted with the results that they are getting from this advertising.

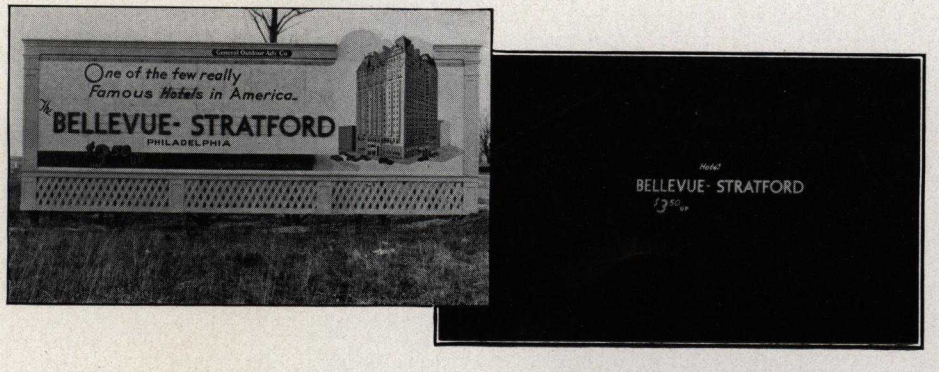
SIGNAL SERVICE CORPORATION
ELIZABETH, NEW JERSEY

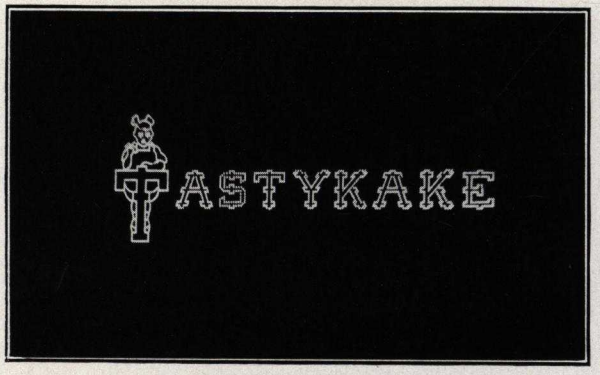
4M—Printed in U. S. A.

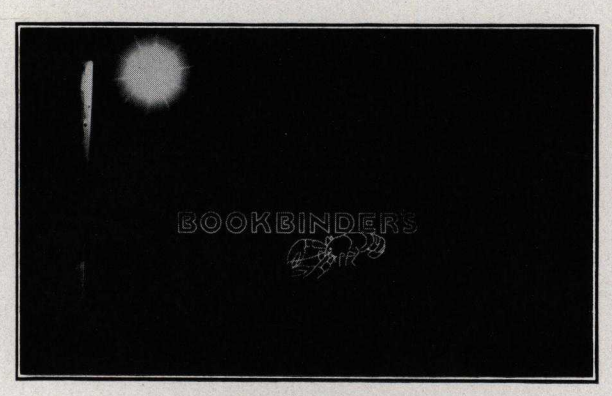
REFLECTOR SIGNS

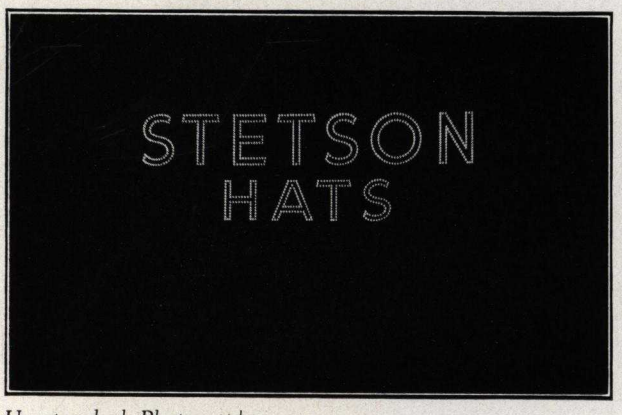
APRIL, 1935 BULLETIN A. L. 25

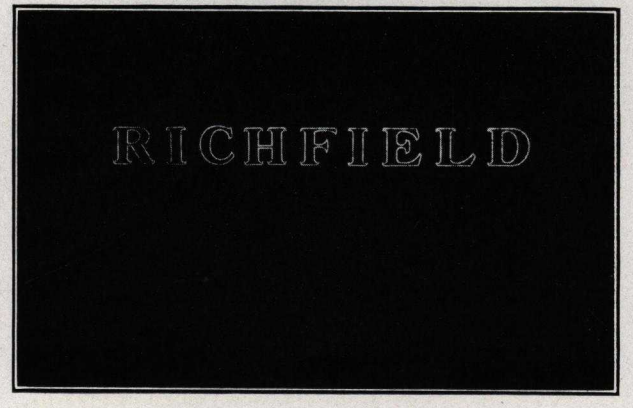
REFLECTORIZED BULLETINS











Unretouched Photographs

These reflectorized bulletins, in the vicinity of Philadelphia, were installed by the General Outdoor Advertising Company. New contracts and greater interest have developed as a result of these installations. Each advertiser is well pleased with his displays.

SIGNAL SERVICE CORPORATION
ELIZABETH, NEW JERSEY

SS SIGNALS

2½M—Printed in U.S.A.

REFLECTOR SIGNS

APRIL, 1935 BULLETIN A. L. 26

REFLECTORIZED BULLETIN

NOCKELS & SONS, INC.
CLOTHIERS
CARROLL. IOWA

December 28, 1934

Stoner McCray System
Des Moines, Iowa

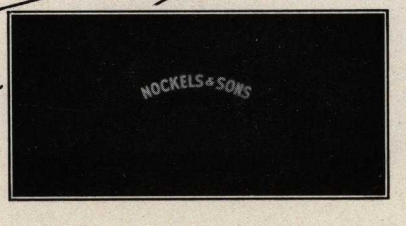
Dear Sirs:

We want you to know how well pleased we are with the reflector button boards that you erected for us.

We have experienced more comment and direct communication from our customers and friends through them, than any other medium of advertising that we have ever done.

One of the greatest advantage of the reflector button boards are that we are advertising our store the entire 24 hours every day.

Yours truly,
Nockels & Sons, Inc.
By: F. B. Nockels Jr.



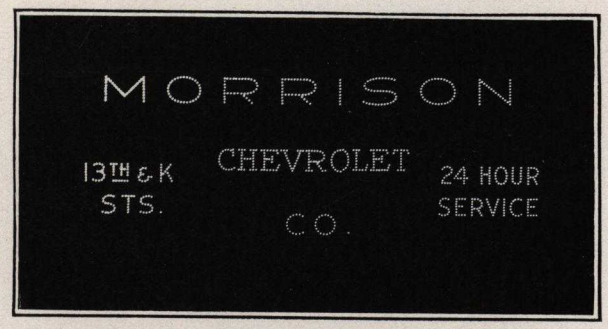
SIGNAL SERVICE CORPORATION
ELIZABETH, NEW JERSEY

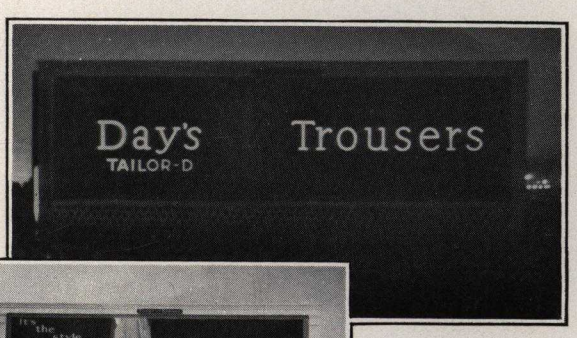
2½M—Printed in U.S.A.

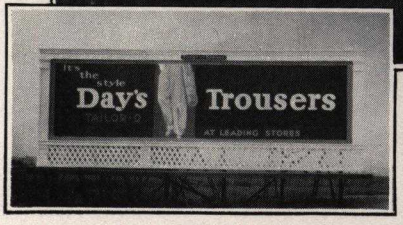
REFLECTOR SIGNS

JUNE, 1935 BULLETIN A. L. 29

REFLECTORIZED BULLETINS







Unretouched Photographs

On the Pacific Coast, Foster and Kleiser Company use Signal Service reflector units to illuminate copy on highway bulletins. These well planned, properly located, and brilliantly effective reflector bulletins range from Southern California to Washington.

Full information covering the use of reflectors for outdoor advertising will be sent upon request.

SIGNAL SERVICE CORPORATION
ELIZABETH, NEW JERSEY

SS SIGNALS

2½M—Printed in U.S.A.

LEADERSHIP

More than

15,000,000 Signal Service reflector units are used in outdoor advertising displays and for highway and railroad signs and signals—60% of reflectors now in use were made by Signal Service—5,000 Highway bulletins and advertising signs are illuminated at night by Signal Service reflectors.

Illuminate highway displays with reflectors and increase your profits.

SS
SIGNALS

For full information write

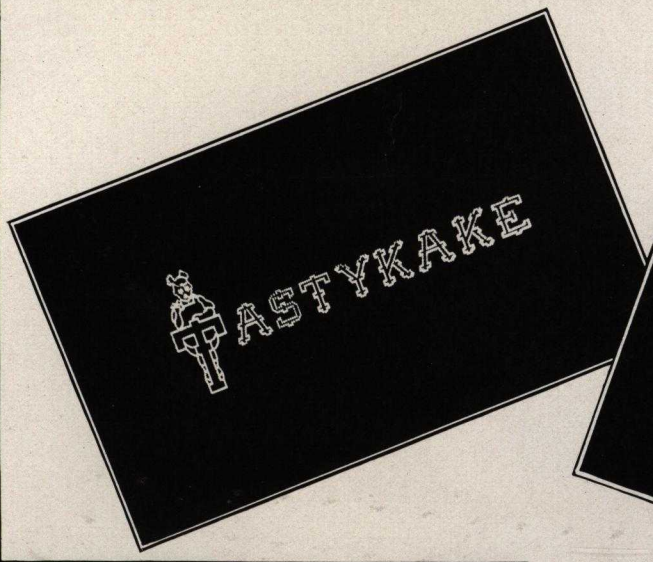
SIGNAL SERVICE CORPORATION

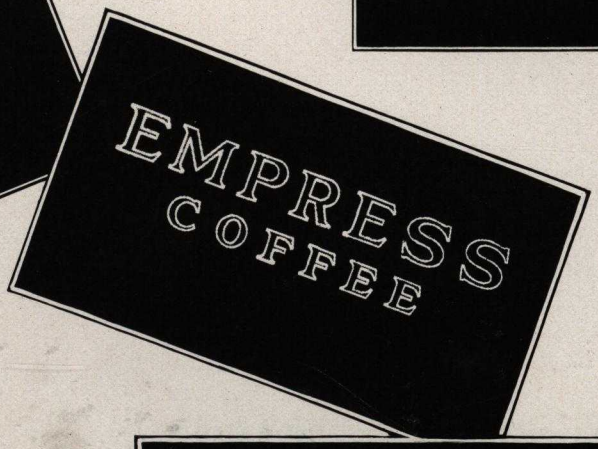
ELIZABETH, NEW JERSEY

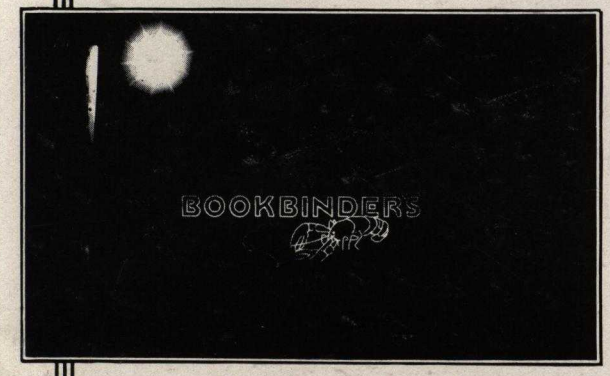
2M—Printed in U. S. A.

Bulletin AL 31
June 1935

REFLECTORS







Reflector units, which are brightly lighted by auto headlights, are an effective means of illumination of highway bulletins employed by outdoor advertising leaders in many lines of business.

Informed advertisers demand Signal Service reflector units because of their greater brilliancy, range and durability.

A booklet "Reflectors for Outdoor Advertising", which covers design, layout, construction, location, installation and maintenance of reflector treatments, will be sent upon request.

SIGNAL SERVICE CORPORATION—ELIZABETH, NEW JERSEY

SS SIGNALS

2M—Printed in U. S. A.

Bulletin AL 32
June 1935

SIGNAL SERVICE CORPORATION

ELIZABETH, NEW JERSEY

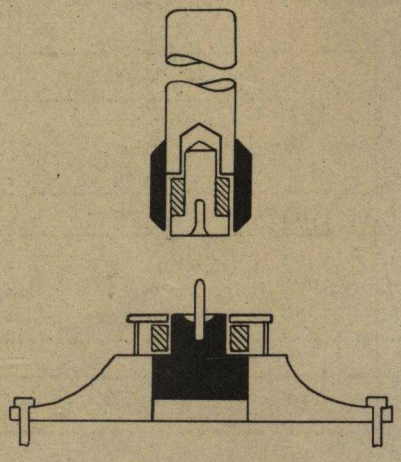
Reflector Outdoor Advertising
Bulletin No. 3A
September 25, 1934

PIERCING HOLES IN STEEL SHEETS FOR REFLECTOR UNITS

Reflectorized outdoor advertising displays present the problem of punching holes in steel sheets. Two types of punches are satisfactory and economical for outdoor plant operators. The first is a low cost hammer punch which serves the purpose of the average operator very nicely. The other is a hand lever operated punch.

ESSCO HAMMER PUNCH SET

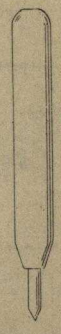
This set is built to punch holes in 22 gauge black or Galvannealed steel sheets or in 26 gauge Galvanized steel. The first cost of this punch set is low, it requires little maintenance if reasonably cared for, and it turns out fast, accurate work at low cost. Outdoor plant operators have used this punch set with entire satisfaction. The set consists of:



Punch and die shown black
Rubber cushions cross hatched

A standard hardened steel die, mounted in a holding shank which is adapted to be held by hand and struck with a hammer. A plunger, mounted against live rubber in the center of the die, is provided with a center hole which fits over a locating pin in the punch thus to position correctly the punch and die in the punching operation.

A standard hardened steel punch, mounted in a cast holder and provided with a stripper which is cushioned by rings of live rubber. A hardened steel locating pin is assembled in the center of this punch.

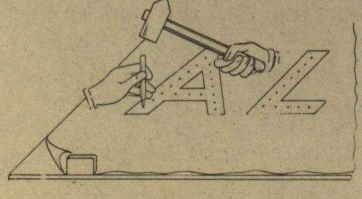


Prick Punch

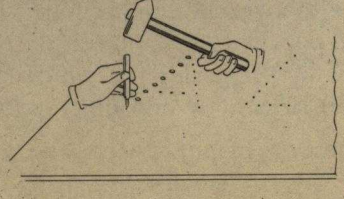
A prick punch, mounted in a shank.

The prick punch is used to prick or center punch the locations of the holes through a pounce print on to the steel sheet—Illustration "A." This prick punch is then used to pierce 1/4" holes in the steel sheet—Illustration "B".

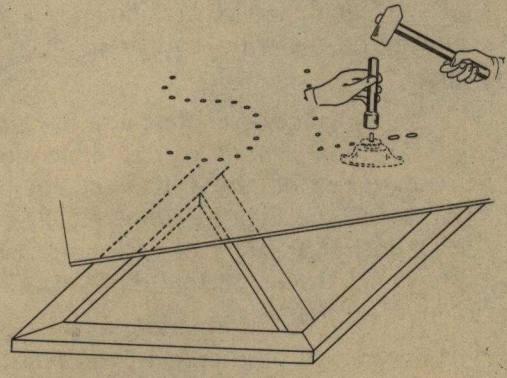
After the 1/4" locating holes have been punched in the steel plate, the plate is traveled over the punch. The locating pin in the punch fits through the 1/4" locating holes in the steel plate, the die is placed over the locating pin, thus placing it in proper position with respect to the punch, and power is applied with a three pound hammer—Illustration "C". One good blow is sufficient. The plate is now listed off the locating pin and carries the punched wafer off with it.



A—Prick punching hole locations through pounce pattern to steel sheet



B—Piercing location holes



C—Punching operation using 2" x 4" wood frame to support work.

(OVER)

This set permits the outdoor operator to handle his own steel work, to cut his cost, to meet rush orders, and to use his men in the shop on rainy days. Even in shops equipped with a hand lever or power punch this hammer punch is very useful for punching holes in the center of larger than ordinary sheets; *i. e.* sheets too large for a hand lever or power punch to handle.

This punch gives good results with unskilled labor. It punches clean-cut round holes without burrs, distorting or buckling the plates. It may be used on any size of sheets and, if necessary, emergency work can be done in the field. While one man can do the work alone, best speed and economy is made with a man and a helper, one to shift the steel plate and the other to punch the holes.

A little oil on the punch is all the attention it needs. If it becomes dull, it may be reground and readjusted locally by a competent mechanic or the manufacturer will grind and readjust it at low cost.

TINNERS OR ARCH PUNCHES

A tinner's or arch punch has been found unsatisfactory for 22 gauge. For this reason it is not recommended for the punching of holes in steel plates which, to avoid distortion in shop handling or due to damage in service, should be 22 gauge.

HAND LEVER OPERATED PUNCHES

Reflector treatments often require steel sheets 48" wide. A hand lever punch should therefore have a throat depth of at least 24" so that holes may be punched in the center of 48" wide sheets. Three reasonably priced punches have been located. They have the following specifications:

	H. & W.	S. M.	W. M. T.
Construction	Heavy cast frame	Welded steel frame	Welded 5/8" steel
Depth of Throat	24"	24 1/4"	24"
Capacity	1" Holes thru 18 gauge steel	1" Holes thru 18 gauge steel 8000 lbs. pressure	1" Holes thru 18 gauge steel 19,600 lbs. pressure
Net Weight	900 lbs.	160 lbs.	400 lbs.
Dimensions	Not given	35" x 5 1/2" x 20"	8" x 20" x 21" high

These hand lever operated punches are supplied if required with notching and shearing equipment to give them additional shop utility.

Signal Service recommends a Cleveland type coupling with this type of equipment so that the punch and die with stripper or shear and notching attachment may be quickly and readily interchanged.

Signal Service offers at a low price, for use in connection with hand lever operated punches, punches and dies of correct dimensions for various sizes of Signal Service reflector units. These standard punches are drilled and equipped with a feeler pin cushioned by a spring. In the punching operation, the hole locations are first prick punched on the steel plate. Then, as the work is fed to the punch, the center of each hole is located by the feeler pin which snaps into the prick punch depression. By this method holes may be quite accurately and quickly located and punched.

Further information including names of manufacturers and approximate prices on punches described will be supplied upon request.

SIGNAL SERVICE CORPORATION
Elizabeth, New Jersey

2½M—Printed in U. S. A.

SIGNAL SERVICE CORPORATION

ELIZABETH, NEW JERSEY

Reflector Outdoor Advertising
Bulletin No. 3A
September 25, 1934

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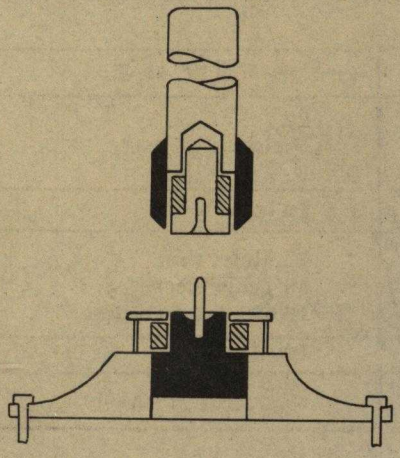

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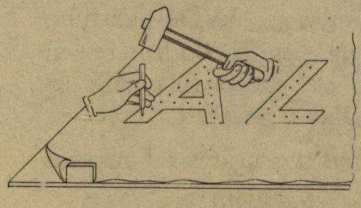

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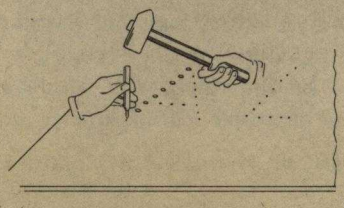

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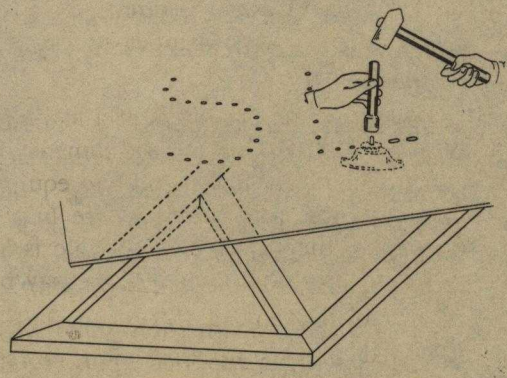

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SIGNAL SERVICE CORPORATION
Elizabeth, New Jersey

2½M—Printed in U. S. A.

E-721

September 18, 1935

ESSCO HAMMER PUNCHES

Supplementing other material on the handling of Essco punches, the following points are important:

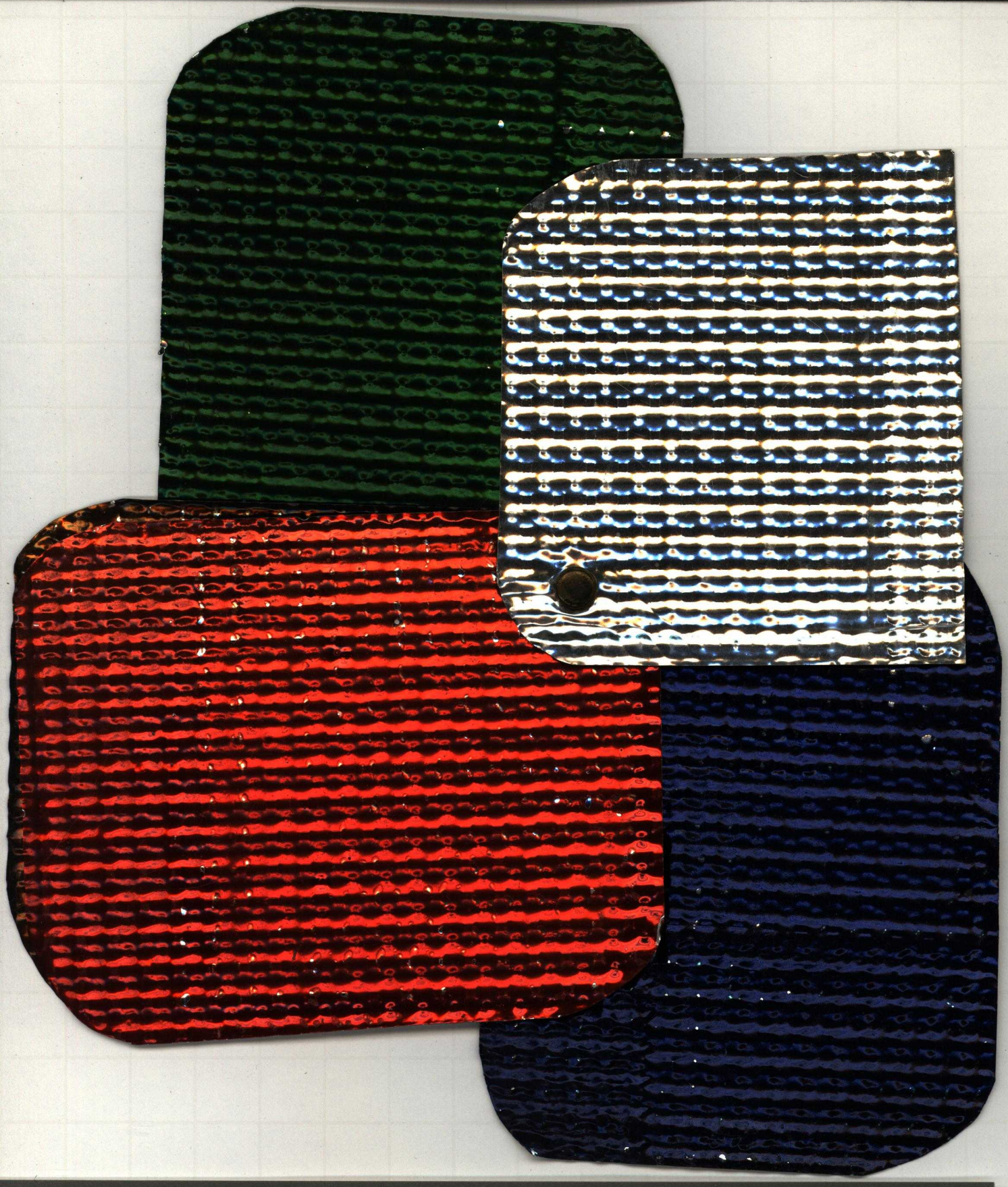
The first step in the operation of this punch is to drive a hole through the material to be punched, which leaves a rather heavy burr on the bottom side of the metal. This burr or rough edge side of the location hole should be faced downward when the metal is fitted over the locating pin on the punch in the punching operation. This is important since, if the burr side is faced up, it will destroy the die immediately because it throws the relationship between the die and the punch out of line FACE THE BURR DOWN.

There is a difference between Galvannealed and galvanized steel. Galvannealed steel of 22 gauge can be punched without any harm to the set. Galvanized steel destroys the edge of the punch or die quickly and this outfit should not be used on galvanized steel of greater thickness than 26 gauge.

Some workmen have been observed to bang the prick punch hole or guide hole in the metal by hammering the metal on over the guide pin in the punch. This distorts the metal and also bends the guide pin so that the punch and die are not in proper relationship to each other in the punching operation.

This outfit is inexpensive; it only costs $10.00. Don't expect too much for $10.00, and do sharpen the punch at a cost of about 50¢ when it becomes dull. The next best way we know of to punch holes is to buy a $100 punch which, of course, eliminates all of these little difficulties for anyone who is willing to pay the price.

SIGNAL SERVICE CORPORATION
Elizabeth, New Jersey



TIFFEN® Gray Scale

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R G B W G K C Y M

A 1 2 3 4 5 6 M 8 9 10 11 12 13 14 15 B 17 18 19